Kepler's Research in Astrology and his Horoscope Collection

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Introduction

The history of western astrology is marked by attempts to reform its theory and practice, of which one of the most notable was that of Johannes Kepler (1571–1630). Kepler included debate on the nature and validity of astrology in several of his treatises, starting with *De Fundamentis Astrologiae Certioribus* (*On the More Certain Fundamentals of Astrology)* in 1601, running through *Tertius Interveniens* (*Third Man in the Middle*) in 1610, and including the major work, *Harmonice Mundi*, in 1619.[1] In *On the More Certain Fundamentals of Astrology*, Kepler claimed that his reformed version of astrology was proved by research and based on empirical observation and experience. The basis of his claims was his own collection of 800 horoscopes, which forms a part of his twenty-two volume handwritten legacy. A study of these horoscopes suggests the presence of a specific order in the organization of the material. The collection includes sixteen charts that belong to one family and which supports the proposition he outlined in *De Stella Nova.*[2] In *Harmonice Mundi*, he discussed the similarities he found in horoscopes of members of the same family, writing that,

> the fact, outweighing any exception… is the affinity of the nativities under which parents and their children are born' and that at the birth moment of a child 'the new vital faculty of the soul arises, particularly at the time when the stars return to the

[1] For Kepler's polemics with Pico: Johannes Kepler, *On the More Certain Fundamentals of Astrology Prague 1601,* trans. J. Bruce Brackenridge and Mary Ann Rossi, *Proceedings of the American Philosophical Society* 123, no. 2, 1979; Patrick Boner, trans. and annotator, 'Kepler on the New Star: De stella nova, Chapters 7-9', *Culture and Cosmos* 14, no. 1 and 2, (Spring/Summer and Autumn/Winter 2010): pp.209–234; Johannes Kepler, *The Harmonies of the World*, trans. J. Field (The American Philosophical Society, 1997).

[2] Johannes Kepler, *De Stella Nova in pede serpentarii* (Prague, 1606), p.43 [hereafter, Kepler, *De Stella Nova*].

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> seats of the mother's or father's nativity, or to the same configurations and remind the soul of themselves and of their heavenly imprint.[3]

Kepler's horoscope collection is accompanied by his own compilation of historical data, such as the birth information for the Imperial Prince, Duke of Krumau Hans Ulrich von Eggenberg. The inclusion of this horoscope in the collection does not seem accidental. There are similarities in the biographies and philosophical views of Kepler and Eggenberg; for instance, Eggenberg's attempt to realize a political, philosophical and architectural program worthy of a perfect ruler coincides with Kepler's program of political astrology.

Background: Kepler's philosophy

Kepler's thinking was influenced by three separate but related factors: first, Giovanni Pico della Mirandola's (1463–1494) sceptical text, *Disputations against Divinatory Astrology*; second Nicholas Copernicus's (1473–1543) heliocentric world system; and third, his own Lutheran theology. These influences and debates formed a new astrological paradigm that prompted Kepler to attempt a reform of traditional astrology. Kepler first encountered Copernicus's work while he was studying at the University of Tübingen under the guidance of the famous mathematician and astronomer Michael Maestlin (1550–1631). In his *Mysterium Cosmographicum* (*The Secret of the Universe*), published in 1596, Kepler remarked that,

> … six years ago [in 1590], when I worked under the direction of the very famous Master Michael Maestlin at Tubingen, I was disturbed by the many disadvantages in the usual opinion about the universe; also I was delighted by Copernicus, whom my Master often mentioned in his lectures.[4]

As a student of the Faculty of Arts at the University of Tübingen, Kepler studied astrology along with astronomy, as did every university student of

[3] Johannes Kepler, *The Harmonies of the World*, trans. J. Field (The American Philosophical Society, 1997), p.383 [hereafter, Kepler, *Harmonies*].

[4] Johannes Kepler, *Rodromus dissertationum cosmographicarum, continens mysterium cosmographicum, de admirabili proportione orbium coelestium, de que causis coelorum numeri, magnitudinis, motuumque periodicorum genuinis & proprijs, demonstratum, per quinque regularia corpora geometrica* (Tubingen: 1596), p.5, in Max Caspar, *Kepler*, trans. C. Doris Hellman (New York: Dover Publications Inc.), pp.45–46.

that time.[5] He also, of course, studied the traditional geocentric Ptolemaic worldview along with Copernicus's innovative sun-centred model. Kepler admitted that, in the course of the study, he was inclined to favour the Copernican universe, remarking that 'I collected together little by little, partly from Maestlin's words, partly by my own efforts, the advantages over Ptolemy'.[6] Robert Westman argues that Copernicus' system provided a simpler explanation of astronomical phenomena in comparison to that of Ptolemy.[7] Therefore, as Westman points out, 'the force of the Copernican entailments was… sufficient to encourage Kepler to search further, beyond the arguments from geometrical and astronomical harmony', offered by Copernicus and his adherents.[8]

Still, there was one more source that led Kepler to rethink his attitude towards the general principles of astronomy and astrology: Giovanni Pico della Mirandola's (1463–1494), *Disputationes adversus astrologiam divinatricem* (*Disputations Against Judicial Astrology*), published in 1496 – a sceptical attack on astrology and a sharp critique of its foundations, theory and practice. Sheila Rabin considers that Kepler first read Pico's treatise as early as 1599, although he may had heard of it before: that year was the first time Kepler made reference to Pico.[9] Paradoxically, it had been Pico's objections to astrology that caused Copernicus to reconsider the planetary order and revise the Ptolemaic universe and locate the planets around a centrally positioned Sun.[10] Copernicus's acquaintance with Pico's treatise, which he read, according to Westman somewhere in 1497, soon after arriving in Bologna, prompted Copernicus

> … at that early date to think about a strategy for defending the astronomical foundations of astrology. In other words, even if judiciary astrology could strive only for conjectural

[5] Friederike Boockmann, 'Johannes Kepler's Horoscope Collection', *Culture and Cosmos* 14, no. 1 and 2 (Spring/Summer and Autumn/Winter, 2010): pp.1–32, p.5, at www.CultureAndCosmos.com.
[6] Johannes Kepler, *Le secret du monde,* ed. and trans. Alain Segonds (Paris: Les Belles Lettres, 1984), p.21.
[7] Robert Westman, *The Copernican Question* (Berkeley and Los Angeles, CA, and London: University of California Press, 2011), p.315.
[8] Westman, *The Copernican Question*, p.316.
[9] Sheila J. Rabin, 'Kepler's Attitude Toward Pico and the Anti-astrology Polemic', *Renaissance Quarterly* 50, no. 3 (Autumn 1997), pp.750–770, p.762. See also Remo Catani, 'The Polemics on Astrology 1489-1524', *Culture and Cosmos*, Vol. 3 no 2, Autumn/Winter 1999: pp.16-30.
[10] Westman, *The Copernican Question*, p.103.

> knowledge in making the judgment, astronomy could hope to achieve knowledge that is securely grounded, even if not fully demonstrative in the strict Aristotelian sense.[11]

Thus, it was Pico's arguments that made both Copernicus and Kepler rethink their attitudes toward the general principles of astronomy and astrology.

Rethinking the foundations of astrology

Kepler, as Westman emphasises, accepted most of Pico's astrological scepticism and this lengthy discussion, as he writes, 'formed the crucial axis of controversy… in the sixteenth and early seventeenth centuries', leading Kepler, as a real Copernican, 'to attempt fully to revise the principles of astrology itself'.[12] The question was how this ambition should be accomplished. Gerard Simon argues that Kepler intended to reform astrology in the same way as astronomy: to make astrology a natural science or, rather, 'a practical or applied branch of the sciences of Nature'.[13] The beginning of this process can be traced to the early period of Kepler's work as an astrologer. Rabin even points out the year that Kepler began revising his ideas about astrology: it was in 1598, in his official calendar for that year, which included weather predictions based on astrological principles. This calendar was the first of Kepler's publication of this sort; these writings – producing annual calendars along with weather prognostications – were part of his duties as an astrologer when he first started this practice in Graz.[14] Boockmann mentions that in his first calendar Kepler already articulated arguments for and against astrological predictions.[15] In his response to a letter from Michael Maestlin, discussing this calendar and answering Maestlin's reproach on his critical position towards astrological practice, Kepler insisted that he did not reject astrology and continued to practice it – 'Ex quibus vides me nihil rejicere ex astrologia' ('from what you see, I reject nothing from

[11] Westman, *The Copernican Question*, p.93.
[12] Robert S. Westman, 'The Copernican Question: Prognostication, Skepticism, and Celestial Order', *The Montréal Review* (July 2012), at http://www.themontrealreview.com/2009/The-Copernican-Question-Prognostication-Skepticism-and-Celestial-Order.php (accessed 25 May 2021).
[13] Gérard Simon 'Kepler's astrology: the direction of a reform', *Vistas in Astronomy* 18 (1975): pp.439–448, p.439.
[14] Rabin, 'Kepler's Attitude Toward Pico and the Anti-astrology Polemic', p.762.
[15] Boockmann, Johannes Kepler's Horoscope Collection', p.15.

astrology') – but he only discarded what he regarded as unnecessary , such as, for example, 'astrological houses'.[16]

In his personal correspondence with Maestlin in 1598, Kepler questioned the importance of the zodiacal triplicities; these are grouping of the signs into trigons that compose four sets of three signs, each at 120-degree intervals, 'which are measured by means of the signs'.[17] Later, in 1606, in his treatise *De stella nova in pede Serpentarii* (*On the New Star*), Kepler rejected 'the division of the zodiac into twelve parts and the designation of those parts according to gender, animals and the elements' as a 'sheer convention'.[18] The result was controversy on all sides. In his letter to David Fabricius in 1602, Kepler bitterly complained that he had stirred up everyone against him: 'Chaldeans, Arabs, Ptolemy, friends and enemies, Pico and the other foes… and still I have attempted to defend astrology to the utmost'.[19] As Sheila Rabin wrote, although 'Kepler severely restricted his use of astrology', he managed 'to find out of an evil-smelling dung heap… a gold nugget' that was a doctrine of planetary aspects: 'the angles at which the light rays of two planets appear to strike the earth'.[20] It appeared to him, concludes Rabin, that 'this was the source of his success as an astrologer'.[21]

Kepler's religion: 'I am a Lutheran astrologer… '

Pico and Copernicus both influenced Kepler but his religious convictions provided a deeper context. Max Caspar, in his detailed biography of Kepler, points out that he intended to become not a mathematician,

[16] Johannes Kepler, *Gesammelte Werke. Briefe 1590-1599*, Vol. 13 (München: 1945), p.185, at https://publikationen.badw.de/de/002334747 (accessed 10 June 2021). And for the houses see James Holden, *A History of Horoscopic Astrology* (Tempe, AZ: American Federation of Astrologers, 1996), p.13.

[17] Dorian Greenbaum, ed., 'Kepler and Michael Mästlin on their Sons' Nativities, 1598', trans. Cornelia Linde and Dorian Greenbaum, *Culture and Cosmos* 14, no. 1 and 2 (Spring/Summer and Autumn/Winter 2010): pp.65–78, p.66. And see Holden, *A History of Horoscopic Astrology*, p.4.

[18] Boner, 'Kepler on the New Star: De stella nova, Chapters 7-9', pp.209–34, p.210.

[19] Johannes Kepler, *Gesammelte Werke. Briefe 1599-1603*. Vol. 14 (München), p.247, at https://publikationen.badw.de/de/002334748 (accessed 10 June 2021).

[20] Rabin, 'Kepler's Attitude Toward Pico and the Anti-astrology Polemic', p.754.

[21] Rabin, 'Kepler's Attitude Toward Pico and the Anti-astrology Polemic', p.755.

astronomer, or philosopher, but a theologian.[22] After obtaining a master's degree at the University of Tübingen, Kepler continued his theological studies for three years more in order to prepare himself for a ministry in the Lutheran Church in his native Württemberg. He completed his studies in 1594; however, circumstances did not allow him to fulfil his plan and he was appointed to Graz, to teach mathematics at the local Protestant seminary. Caspar notes that the choice for Kepler was made due to his 'mathematical and astronomical knowledge, by far the most suitable candidate for the teaching position there, the only one worthy of consideration and likely to bring honour to Tubingen University'.[23] Although Kepler was not happy with his new post, still there was room for theological reflections alongside his intellectual thoughts in mathematics, astronomy and astrology.[24] Indeed, Lutheran theology provided a foundation for Kepler's proposed revision of astrology as natural science. As Peter Barker and Bernard R. Goldstein put it: astrology was an instance of the special Lutheran attitude toward the natural world.[25] Claudia Brosseder observes that, in sixteenth century Protestant Germany, 'astrology presented itself in a peculiar sense'.[26]

The most important figure in Lutheran astrology was Philip Melanchthon (1497–1560), the intellectual leader of the Lutheran Reformation. In Melanchthon's view, the study of astrology teaches about Providence, or the world's providential design, however, he thought, 'only the pious scholar can decipher the celestial writing of astrology, and only he knows how to actually understand divine providence by means of astrology'.[27] As Brosseder puts it: 'Melanchthon's interpretation of Genesis 1:14, 'fiant luminaria in firmamento caeli, et dividant diem ac noctem, et sint in signa et tempora, et dies et annos' ('Let there be lights in the firmament of the heavens to separate the day from the night') , became

[22] Max Caspar, *Kepler,* trans. and ed. C. Doris Hellman, introduction and references by Owen Gingerich, additional bibliographical citations by Owen Gingerich and Alain Segonds (New York: Dover Publications Inc., 1993), p.50.
[23] Caspar, *Kepler,* p.52.
[24] Boockmann, 'Johannes Kepler's Horoscope Collection', p.11.
[25] Peter Barker and Bernard R. Goldstein, 'Theological Foundations of Kepler's Astronomy', *Osiris*, 2nd Series, Vol. 16, Science in Theistic Contexts: Cognitive Dimensions (2001): pp.88–113, p.94.
[26] Claudia Brosseder, 'The Writing in the Wittenberg Sky: Astrology in Sixteenth-Century Germany', *Journal of the History of Ideas* 66, no. 4 (2005): pp.557–576, p.559.
[27] Brosseder, 'The Writing in the Wittenberg Sky: Astrology in Sixteenth-Century Germany', p.559.

the key passage of the theological legitimation of any form of astrology'.[28] Thus,,Melanchthon's adherents contributed to one great project: motivated by their religious convictions, they wanted to reform astrology and raise it to the rank of a universal science.[29]

Peter Barker and Bernard R. Goldstein specify that all Lutheran universities at that period were famous for the influence of Melanchthon, and especially for his ideas on natural philosophy and providence.[30] As for Tübingen University, Melanchthon's student Jacob Heerbrand (1521–1600) taught theology to both Maestlin and Kepler, and presented Melanchthon's views.[31] Although Bernard R. Goldstein states that he has not found an explicit statement by Kepler of his indebtedness to Melanchthon, he however considers that Melanchthon's view of the Bible, 'had a serious impact on Kepler as a student of theology in a Lutheran seminary'.[32] However, it is evident that Kepler, from the early days of his studies, immersed himself into this theological intellectual discourse and, as Gerard Simon remarks, Kepler discussed his own project of astrological reform very early in his correspondence and spent years bringing it to completion.[33] Citing Kepler's famous statement: 'I am a Lutheran astrologer, throwing away the nonsense and keeping the kernel', Field considers that Kepler's reforms seem to be as radical as Luther's reform of the Church, with a general principle based on experience and observation.[34] Sachiko Kusukawa points out that, for Melanchthon, the study of astronomy and astrology were inseparable because they lead to the knowledge of God's governance over the heavens; however, the difference was that astronomy studies celestial motions whereas astrology

[28] Brosseder, 'The Writing in the Wittenberg Sky: Astrology in Sixteenth-Century Germany', p.560.
[29] Brosseder, 'The Writing in the Wittenberg Sky: Astrology in Sixteenth-Century Germany', p.560.
[30] Barker and Goldstein, 'Theological Foundations of Kepler's Astronomy', p.96.
[31] Barker and Goldstein, 'Theological Foundations of Kepler's Astronomy', p.96.
[32] Bernard R. Goldstein, 'What's New in Kepler's New Astronomy?', in J. Earman and J. D. Norton, eds, *The Cosmos of Science: Essays of Exploration* (Pittsburgh, PA: University of Pittsburgh Press, 1997), pp.3–23, p.5.
[33] Simon, 'Kepler's astrology: the direction of a reform', p.440.
[34] Judith Field, 'A Lutheran Astrologer: Johannes Kepler', *Archive for History of Exact Sciences* 31 (1984): pp.190–268, p.220.

considers celestial effects.[35] This, of course, was the standard division established by Claudius Ptolemy in book 1 of the *Tetrabiblos*.[36]

Astrology on sounder foundations: Kepler's theory and method

Kepler located a natural vehicle for astrological effects in the aspects (astrologically significant distances) between planets. This became central to Kepler's astrology, contributing to what he called it in his *Tertius Interveniens* (*The Third Man in the Middle*), published in 1610, the core of truth which constituted 'a pearl or gold nugget' which could be found amongst astrology's otherwise nonsensical claims.[37] The title of this work reflected Kepler's attitude towards astrology; as Edward Rosen points out, Kepler refused to associate himself with those who aimed to destroy astrology outright: in the battle swirling around him for and against astrology, he himself was therefore the 'third man in the middle'.[38] He intended to strongly defend his reformed astrological thought by his theory using philosophical principles, physical measurement and his own astrological experience, as well as accepting the validity of the experience of astrologers, his contemporaries.[39]

As for the astrologer's practice and experience, Kepler focussed on the validity of observation and research in *On the More Certain Fundamentals of Astrology*. (Judith Field argues that, being published in Latin, the text was addressed to the learned and should thus be considered a philosophical discussion.[40]) This small treatise is an annual calendar for the year 1602 with astrological predictions in meteorology for the whole year, described month by month, as well as his prognosis for the crops, illnesses and political and military matters; it also includes detailed theoretical commentaries on the physical and geometrical causes of the astrological

[35] *Sachiko Kusukawa, The Transformation of Natural Philosophy: The Case of Philip Melanchthon, Ideas in Context*, Series Number 34 (1992): pp.130–131.
[36] Claudius Ptolemy, *Tetrabiblos*, trans. F.E. Robbins, Loeb Classical Library No. 435 (Cambridge, MA: Harvard University Press, 2001), Book I, p.3.
[37] Johannes Kepler, 'Tertius Intervenience', *Gesammelte Werke. Kleinere Schriften, 1602/1611*, Vol. 4, trans. Ken Negus (München: 1941), p.161, at https://publikationen.badw.de/de/005353411 (accessed 10 June 2021).
[38] Edward Rosen, 'Kepler's attitude toward Astrology and Mysticism', in Brian Vickers, ed., *Occult and Scientific Mentalities in the Renaissance* (Cambridge: Cambridge University Press, 1984), pp.253–272, p.256.
[39] Rabin, 'Kepler's Attitude Toward Pico and the Anti-astrology Polemic', p.761.
[40] Field, 'A Lutheran Astrologer: Johannes Kepler', p.196.

prognosis.[41] While discussing the power of aspects, their formation and efficacy in Thesis XXXVI of the *Fundamentals*, Kepler referred to repetitive experience as an argument proving the validity of his statement: 'Since these facts are most thoroughly confirmed by experience, they lead me to the beliefs I describe in what follows'.[42] In addition, in Thesis XXXVIII, while presenting a concept of the new three aspects, 'namely quintile, biquintile and sesquiquadrature,' Kepler assured their validity on the basis of experience: 'which experience', as he wrote, 'has since repeatedly confirmed'.[43]

The third section of *Fundamentals* dealt with specific predictions for the year 1602, while two short chapters considered political and military provisions. Here Kepler made several statements, concerning 'fundamentals regarding the agreement of human disposition with celestial configurations'.[44] Kepler's approach to the study of the personal horoscopes was the same as he applied to his meteorological observations: he examined them from the point of view of planetary motion and natural causes. In Thesis CXVIII he claimed:

> Astrology clearly has some say in political and military matters, given those statements I have set forth above in the passage on fundamentals regarding the agreement of human dispositions with celestial configurations. For every kind of human disposition that has been roused to lively activity naturally by its own motivation will be moved to vigorous activities in strong aspects, especially if the aspect has a similarity of origin with the particular individual under consideration.[45]

He continued:

[41] Johannes Kepler, *On the More Certain Fundamentals of Astrology*. Prague 1601, trans. J. Bruce Brackenridge and Mary Ann Rossi, *Proceedings of the American Philosophical Society* 123, no. 2 (1979): pp.85–116, at www.jstor.org/stable/986232 (accessed 31 May 2021). For natural causes see Section One, pp.91–96; on geometrical causes see Section Two, pp.96–100.
[42] Kepler, *On the More Certain Fundamentals of Astrology*, p.97.
[43] Kepler, *On the More Certain Fundamentals of Astrology*, p.97.
[44] Kepler, *On the More Certain Fundamentals of Astrology*, p.103.
[45] Kepler, *On the More Certain Fundamentals of Astrology*, p.103.

> … since a person is a social animal, dispositions are particularly oriented to a public undertaking when those rays of planets are oriented geometrically in the heavens. But this task may be undertaken more accurately if there are ready at hand the horoscopes of those who (if I may use a Tychonian phrase) govern public destiny.[46]

Kepler's political astrology

Nicholas Campion, in his study of Kepler's political astronomy and astrology, argues that Kepler believed that astrology, 'modernized and purged of its medieval dogma, would offer a valuable tool for managing the state and preserving political order'.[47] The tradition of connecting astrological factors such as the great cycles of planets, for instance the conjunctions of Saturn and Jupiter, with the rise and governing of political dynasties and religions had been developed in Islamic astrology.[48] In the twelfth century, European astrologers discovered Abu Mashar's (787–886) ninth-century treatise, *On the Historical Astrology: the Book on the Religion and Dynasties,* when the book was translated into Latin. Darin Hayton points out that this treatise 'quickly became the most important text to correlate large-scale historical changes to the motions of the heavens'.[49] Kepler himself, according to Campion, 'was operating in a milieu in which astronomical cycles were still widely seen to provide a wider context for historical developments'.[50] However, for Lutheran astrologers, as Brosseder notes, the doctrine of conjunctions was problematic because of the intrinsic determinism it introduced into the history of religion, and its incompatibility with God's Divine Providence.[51] Thus, for Protestant

[46] Kepler, *On the More Certain Fundamentals of Astrology*, p.103.
[47] Nicholas Campion, 'Johannes Kepler's Political Cosmology, Psychological Astrology and the Archaeology of Knowledge in the Seventeenth Century', in Sonja Draxler, Max E. Lippitsch and Gudrun Wolfschmidt, eds, *Harmony and Symmetry. Celestial regularities shaping human culture. Proceedings of the SEAC 2018 Conference in Graz*, Vol. 01 (Hamburg: SEAC Publications, tradition, 2020), no pagination, 7.1.1–7.1.4, 7.1.2.
[48] See Abu Ma'shar, *On the Historical Astrology: the Book of the Religions and Dynasties* (*on the Great Conjunctions*), 2 Vol., ed. and trans. Keiji Yamamoto and Charles Burnett (Leiden and Boston, MA: Brill, 2000).
[49] Darin Hayton, *The Crown and the Cosmos: Astrology and the Politics of Maximilian I* (Pittsburgh, PA: University of Pittsburgh Press, 2015), p.29.
[50] Campion, 'Johannes Kepler's Political Cosmology', 71.2.
[51] Brosseder, 'The Writing in the Wittenberg Sky: Astrology in Sixteenth-Century Germany', pp.569–570.

astrologers, Melanchthon among them, astrology could be a reflection of God's work. Melanchthon, in his *Testimony for Ioannes Prunsterer*, wrote that:

> Since he [the student] attached himself to this natural philosophy (physice) and saw that consideration of matter (considerationen materiae) is useless unless that the higher cause is also considered which moves and excites matter, namely, the motion of the heaven and stars, he diligently worked on that most pleasing part of all which inquires into the movements and effects of the stars, which is indeed worthy of knowing for the sake of many other uses and also to be more studiously studied because it reminds the human mind about the Work of God and clearly testifies that that the nature of things did not arise by chance, but that it was established and arranged by some eternal and architectrical mind thinking about and taking care of the order (ordinem intelligente et tuente). This statement about God is the beginning of the greatest virtues.[52]

Brosseder stresses that Melanchthon and his adherents sought to praise astrology as knowledge with universal range, which gave cognizance 'for the study of nature as well as for the history and fate of mankind and of human individuals in the past and future'.[53] In Lutheran thought, as Barker and Goldstein point out, moral principles were set up by God, in his providential plan, to provide a stable and harmonious social world for the human race:

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[52] Kusukawa, *The Transformation of Natural Philosophy*, p.159, trans. Sachiko Kusukawa: '*Cumque ad haec Physicen adiungeret, videretque inutilem esse considerationem materiae, nisi etiam illa superior causa aspiceretur, quae materiam movet, et ciet, videlicet motus coeli et siderum, diligenter elaboravit, in ea parte omnium dulcissima, quae motus et effectus siderum inquirit, quae quidem cum propter alias multas utilitates cognition digna est, tum vero eo studiosius consideranda est, quod hominum mentes de Deo opifice commonefacit, ac perspicue testator, hanc naturam rerum non casu exitisse, sed ab aeterna quadam mente architectatrice ordinem intelligente et tuente conditam et distributam esse. Quae scntentia d Deo maximarum virtutum est initium.'*

[53] Brosseder, 'The Writing in the Wittenberg Sky: Astrology in Sixteenth-Century Germany', p.574.

> therefore Lutherans like Melanchthon and Kepler believed that the physical universe had been established in a way and according to a pattern intended for the benefit of mankind and physical laws, including those to be found in astronomy.[54]

In his discussion of military and political topics in the *Fundamentals*, Kepler then established a role for human agency:

> nothing can be sought from astrology than a certain driving force of dispositions; whatever will happen in human affairs is in the power of people's free will, which is the image of God and not the offspring of nature and in the power of other causes.[55]

Still, as Campion argues, such astrological dispositions were key to Kepler's political theory and the study of cyclical astronomical events and the analysis of their repetition were central to his reformed astrology.[56] Kepler demonstrates such an approach in Thesis 71 of his *Foundations*: he examines the major planetary aspects of 'special significance' in the year 1602, that are conjunctions of Saturn, Jupiter and Mars and concluded that

> … experience showed that under these two conjunctions souls were generally stunned and frightened, or aroused in the expectation of revolts, and this fact was very significant for a multitude of people congregated in one place either for some undertaking, or for destruction, as military experience testified.[57]

To affirm his judgement, Kepler looked back to the past events and refers to incidents that occurred at the time of the same configurations, such as a battle at Eger, when the army of Archduke Maximillian was defeated with great losses and retreated in disorder in 1596: this event happened on the opposition of Jupiter and Mars.[58] The other event, more than twenty years before the battle of Eger, was the St. Bartholomew's Day massacre in 1572, which occurred on a conjunction of Mars and Saturn. Kepler concluded

[54] Barker and Goldstein, 'Theological Foundations of Kepler's Astronomy', p.106.
[55] Kepler, *On the More Certain Fundamentals of Astrology*, p.103.
[56] Campion, 'Johannes Kepler's Political Cosmology', section 7.1.2.
[57] Kepler, *On the More Certain Fundamentals of Astrology*, p.104.
[58] Kepler, *On the More Certain Fundamentals of Astrology*, p.104.

that 'it is not entirely useless for leaders and rulers of people to be taken up with such considerations; for in order to rule the multitude one must have great skill and an awareness of those forces that affect human dispositions in a group'.[59] Kepler suggests the existence of a kind of regulation for people's deeds and actions to prevent or avoid social disturbances and eruptions. The opportunity to change the course of events supports the notion that 'astrology is rather probabilistic than deterministic in nature', as Campion points out.[60] Kepler calls it 'remedies' that are always 'in our power' and can 'guard against consternation in the minds of the people, however'; thus, he continues: 'things may happen, and nothing is absolutely predestined'.[61]

From this perspective, the role and participation in the events of those 'who govern public destiny' comes into focus in Kepler's political astrology. He claims that some illustrious people can also be moved by these or similar aspects, especially if the current state of heaven corresponds to their horoscopes and the same disturbances affect them in some way; however, 'it moves the stronger ones… to great accomplishments, but nothing is clearly inevitable'.[62] The spirit and state of mind are of particular importance to the commander and therefore the leaders can be confused: 'because of an agitation of their horoscopes, danger through their own fantasies would afflict the army and the fortune of war'. As Campion points out, Kepler intended to apply his 'hard kernel of astrological truth' for the preservation of political and social harmony – 'to warn politicians of future periods of potential crisis'… in order that governments could 'devise and implement policy, taking the appropriate action'.[63] For this purpose, the horoscopes 'of those who govern public destiny' should be 'ready at hand'.[64] Kepler therefore set out to collect and study as many natal horoscopes, and this comprised a major part of his empirical study of humanity's relationship with the cosmos. However, it has been generally overlooked by modern scholarship.

Kepler's horoscope collection

The story of the archive is illustrative of the reception of Kepler's work in the centuries after his death. Kepler's horoscope collection itself is a part

[59] Kepler, *On the More Certain Fundamentals of Astrology*, p.104.
[60] Campion, 'Johannes Kepler's Political Cosmology', section 7.1.2.
[61] Kepler, *On the More Certain Fundamentals of Astrology*, p.104.
[62] Kepler, *On the More Certain Fundamentals of Astrology*, p.104.
[63] Campion, 'Johannes Kepler's Political Cosmology', section 7.1.2.
[64] Kepler, *On the More Certain Fundamentals of Astrology*, p.103.

of his large 22 volume handwritten heritage, 18 volumes of which are stored at the Saint Petersburg Branch of the Archive of the Russian Academy of Sciences. U.H. Kopelevich outlines the narrative of the transmission of this 18-volume compendium to the Russian Academy of Sciences, starting with a dramatic letter, written on 30 January 1773 by the German scholar Christoph Gottlieb von Murr (1733–1811) to the Russian academician and prominent mathematician Leonhard Euler (1707–1783).[65] In this letter, von Murr describes his unsuccessful attempts to find a buyer for Kepler's manuscript collection, which had fallen into the hands of a private individual, who put it up for sale. Von Murr appealed to the Russian academicians to save the inheritance of this great astronomer: all his previous attempts to address European scientific organizations, universities and individuals for such support had failed, as Kopelevich reported.[66] Accordingly Russian academicians presented the Empress Catherine the Great (1729–1796) with a proposal to buy Kepler's heritage; she made her decision and the acquired manuscripts arrived in St Petersburg on 18 June 1774. They were then transferred to the Library of the Academy of Sciences.[67] Later, in August 1839, as Bazilevskaya records, due to the appeal of the renowned astronomer and first director of the Pulkovo Observatory Friedrich Georg Wilhelm von Struve (1793–

[65] U.H. Kopelevich, 'Leonard Eiler i pokupka Rossiei rukopisei Keplera', sbornik No. 1: *Raboti o Keplere v Rossii, Germanii i Avstrii* ('Leonard Eiler and Russia's Purchase of Kepler's Manuscripts', collection No. 1: Works on Kepler in Russia, Germany and Austria) S. Petersburg–Munchen, 1994, pp.36–42, p.37 [hereafter, Kopelevich. 'Leonard Eiler']. More information on the subject: U.H. Kopelevich, 'K istorii priobreteniya Rossiei rukopisei Keplera', *Istoriko-Astronomicheskie Issledovaniya*, vip. XI, ('To the History of Russia's Acquisition of Kepler Manuscripts', *Historical and Astronomical Studies*, Issue XI,) Moskva: 1972, pp.131–145; E.V. Bazilevskaya, 'Rukopisnoe nasledie Ioganna Keplera', *Trudi Archiva AN SSSR*, vip. 5 ('Handwritten Heritage of Johannes Kepler', *Proceedings of the Archive of the USSR* Academy of Sciences, issue 5) AN SSSR (Moskva–Leningrad, 1946), pp.297–312; Russian Academy of Sciences, *Letopis* (1724–1802), pp.81, 90, 91, 98, 106) [hereafter, Bazilevskaya, 'Rukopisnoe nasledie Ioganna Keplera']; Karine Dilanian, *The Kepler Project: Kepler's Astrology Phase 2* (Moscow: Institute for the Study of Cosmology and Astronomy in History, Philosophy and Culture, 2017); Irina Tunkina 'The Fate of Kepler's Archive', Proceedings of the conference 'Harmonice Mundi' 2019, in press.

[66] Kopelevich. 'Leonard Eiler', p.37.

[67] Bazilevskaya. 'Rukopisnoe nasledie Ioganna Keplera', pp.297–312, p.300.

1864), Kepler's manuscripts were moved to the Library of the Observatory.[68]

Shenkel stresses that the interest in Kepler's works, which arose in Germany not long before the First World War, for the most part due to the efforts of the mathematician Walther von Dyck (1856–1934).[69] Von Dyck appealed to the national pride of the German scientists and pointed to the publications of the works of Galileo in Italy, Tycho de Brahe in Denmark and Christiaan Huygens in the Netherlands.[70] Negotiations and consultations between van Dyck and the director of the Pulkovo Observatory, the academician Johan Oskar Backlund (1846–1916), led to the decision to start the process of photocopying Kepler's manuscripts in order to let German scholars begin research and publication of Kepler's works. The agreement was to mail Kepler's manuscripts to Germany in sets of two volumes at a time for reproduction. The process took around sixteen years; in 1934 all of the Pulkovo collection was copied and the work successfully completed, writes Shenkel.[71]

In 1937 thirty astronomers of the Pulkovo Observatory, including the director of the Pulkovo Library Petr Yashnov (1874–1940), who studied and complied Kepler's manuscript collection, became victims of the 'purge' of the Observatory, in the so-called 'Pulkovo affair'.[72] Nina Nevskaya notes that after this crushing blow against the Pulkovo Observatory, the Presidium of the USSR Academy of Sciences decided to move Kepler's manuscripts from Pulkovo to the Archive of the Academy

[68] Bazilevskaya. 'Rukopisnoe nasledie Ioganna Keplera', p.301.

[69] P.M. Shenkel, 'K istorii russko-nemetskogo sotrudnichestva v izuchenii nauchnogo naslediya I. Keplera', ed. N. Nevskaya, sbornik No. 1: *Raboti o Keplere v Rossii, Germanii i Avstrii* ('To the history of Russian-German cooperation in the study of the scientific heritage of I. Kepler', ed. N. Nevskaya, collection No. 1: *Works on Kepler in Russia, Germany and Austria*) St Petersburg–Munchen, 1994), pp.83–90, p.84, [hereafter, Shenkel, 'K istorii russko-nemetskogo sotrudnichestva'].

[70] Shenkel, 'K istorii russko-nemetskogo sotrudnichestva' , p.84.

[71] Shenkel, 'K istorii russko-nemetskogo sotrudnichestva', p.88.

[72] Robert A. McCutcheon, 'The 1936–1937 Purge of Soviet Astronomers', *Slavic Review* 50, no. 1 (Spring, 1991): pp.100–117, pp.107, 109; V.U. Jukov, 'Pulkovskoe delo', *Repressirovannie geologi* ('Pulkovo Affair', *Repressed Geologists*) 3rd edn (Moscow–St. Petersburg), pp.411–418, cited from http://www.ihst.ru/projects/sohist/material/dela/pulkovo.htm (accessed 10 June 2021).

of Sciences in Leningrad (now St Petersburg) in June 1938.[73] This change of location for Kepler's manuscripts led to the change of name and inventory numbers from the 'Pulkovo' collection to 'Fund 285', with inventory number one, storage unit number, etc.[74]

One of the previous owners of Kepler's handwritten works, Michael Gottlieb Gansh (1683–1741), had purchased the manuscripts in 1707 with the intention of publishing Kepler's legacy, and brought them to their current condition.[75] He arranged the manuscripts into 22 volumes: 20 in folio and 2 in quarto, bound them in white parchment, and ornamented with gold stamping. He decorated the front covers of the volumes with a motto *'Deo et publico' – 'to God and the people'* and placed the letters 'D', 'M', 'G' and 'H' (that encoded his name – Dominus Michaelis Gottlieb Hanschius) and the date '1712' (the year of binding) on the back covers. Gansh also stamped separate letters on the spine of each volume in such an order so that if all volumes are arranged according to their numbers, they formed an inscription:

M A N U S C K E P P L E R I A N O R U M
I II III IV V VI VII VIII IX X XI XII XIII XIV XV XVI XVII XVIII XIX XX

The Saint Petersburg collection lacks four volumes: VI, VII, VIII and XII (with the letters 'C', 'K', 'E' and 'R'). E.V. Bazilevskaya gave a detailed description of Kepler's handwritten legacy, pointing out that Christoph Gottlieb von Murr, who had appealed to Russia to buy Kepler's manuscripts, explained that these volumes had been kept in the Viennese Library in Austria. However, later research did not reveal volume XII in the said Library.[76] Two other small volumes *in quarto*, also bound in white parchment and decorated with gold stamping, obtained the numbers 21 and 22. They were called MSS. KEPLERI.[77]

[73] N.I. Nevskaya, 'Zabitie stranitsi Pulkovskoi observatorii', *Repressirovannaya nauka*, vip. 2 ('Forgotten Pages of the Pulkovo Observatory', *Repressed Science*, issue 2), St Petersburg, pp.140–144, p.143.
[74] Dilanian, *The Kepler Project*, p.32.
[75] Boockmann, 'Johannes Kepler's Horoscope Collection', p.3.
[76] E.V. Bazilevskaya, 'Rukopisnoe nasledie Ioganna Keplera', *Trudi Archiva AN SSSR*, vip. 5, AN SSSR (Moskva–Leningrad, 1946), pp.297–312, p.303.
[77] Bazilevskaya, 'Rukopisnoe nasledie Ioganna Keplera', p.306.

'Horoscopes ready at hand': Kepler's personal horoscope collection

Kepler's astrological material was scattered throughout the whole collection of his manuscripts: sometimes the horoscopes were presented in Kepler's correspondence as well as in the papers of the other people included in Kepler's estate, like some of the astrological materials of Tycho Brahe.[78] Friederike Boockmann provides a detailed review of this data in her 'Johannes Kepler's Horoscope Collection' along with a 'Survey of the Handwritten Records of Kepler's *Astrologica'*.[79] The horoscope collection itself is composed of two major blocks. One block consists of 50 sheets or 100 pages of a single format, slightly smaller than the rest of the pages of the tome, bound into volume XVIII.[80] The collection contains horoscopes of historical figures like Cicero,[81] Mohammed,[82] Martin Luther,[83] Philipp Melanchthon,[84] Tycho Brahe,[85] Michael Maestlin and other famous personalities.[86] The largest part of the collection are the charts for the principal figures of the European courts. The other set of charts in Kepler's collection is included in volume XXI. It consists of about 20 sheets *in quarto* (pages 403–427, 475) and includes horoscopes of Kepler's relatives, other members of the family, ancestors and close friends, drawn by Kepler's own hand.[87] In total, the collection contains horoscopes for approximately 800 persons, although the number of the calculated charts is about 900, insofar as Kepler sometimes calculated several charts for one person.

Most of the pages in volume XVIII consist of a table divided into six sections on the page; each section contains one horoscope. Some pages and quadrants in the tables were completely filled in, some had only name and birth data of the person, some had only been started to be filled in but were not finished.[88]

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[78] Saint Petersburg Branch of the Archive of Russian Academy of Sciences, Fund 285, inventory number 01, storage 15 [hereafter, Archive Fund, 285].
[79] Boockmann, Johannes Kepler's Horoscope Collection'.
[80] Archive Fund, 285, inventory number 01, storage 14, pp.205–255v and storage 17, pp.403–475.
[81] Dilanian, *The Kepler Project*, p.38, chart 2.
[82] Dilanian, *The Kepler Project*, p.132.
[83] Dilanian, *The Kepler Project*, p.50, chart 2.
[84] Dilanian, *The Kepler Project*, p.60, chart 6.
[85] Dilanian, *The Kepler Project*, p.58, chart 1.
[86] Dilanian, *The Kepler Project*, p. 69, chart 2.
[87] Dilanian, *The Kepler Project*, pp.135–150.
[88] Dilanian, *The Kepler Project*, pp.33–126.

1	2
3	4
5	6

Fig. 1: The scheme of a page from Kepler's horoscope collection

Kepler's handwritten horoscopes are designed in a traditional form: they are of square shape, with a central square that includes a name of the native; most of them comprise birth details, such as the birth year, month, day, and hour with minutes and a place of birth or a longitude for the birthplace. Sometimes Kepler put the name of the native in his own special code, possibly for the purposes of secrecy.[89] The space around the central square of each figure is divided into twelve parts – triangles that represent 'the houses' of the horoscope, with coordinates on the borders of each astrological house. Each chart includes the positions of the seven planets – the Sun, the Moon, Mercury, Venus, Mars, Jupiter and Saturn – the Lunar Nodes and the Part of Fortune, the latter calculated from the ecliptic longitudes of the Sun, Moon, and Ascendant, using Ptolemy's formula.[90] Sometimes Kepler recorded the positions of the fixed stars and planetary aspects in his remarks to the horoscopes.[91] Besides the basic information concerning birth times, Kepler puts additional data in the margins, like an alternative birth time or other correcting information, or specifying important life events or the time of death of a person, marking it with astrological aspects, thus continuing his work on the collection and constant observations and research.[92]

[89] Dilanian, *The Kepler Project*, p.123, horoscope no. 3 in a table.
[90] Ptolemy, *Tetrabiblos*, Book III, Ch. 10, p.275.
[91] See for example, Dilanian, *The Kepler Project*, p.35, chart 6 of Friedrich von Wurtemberg.
[92] Dilanian, *The Kepler Project*, p.89, chart 2.

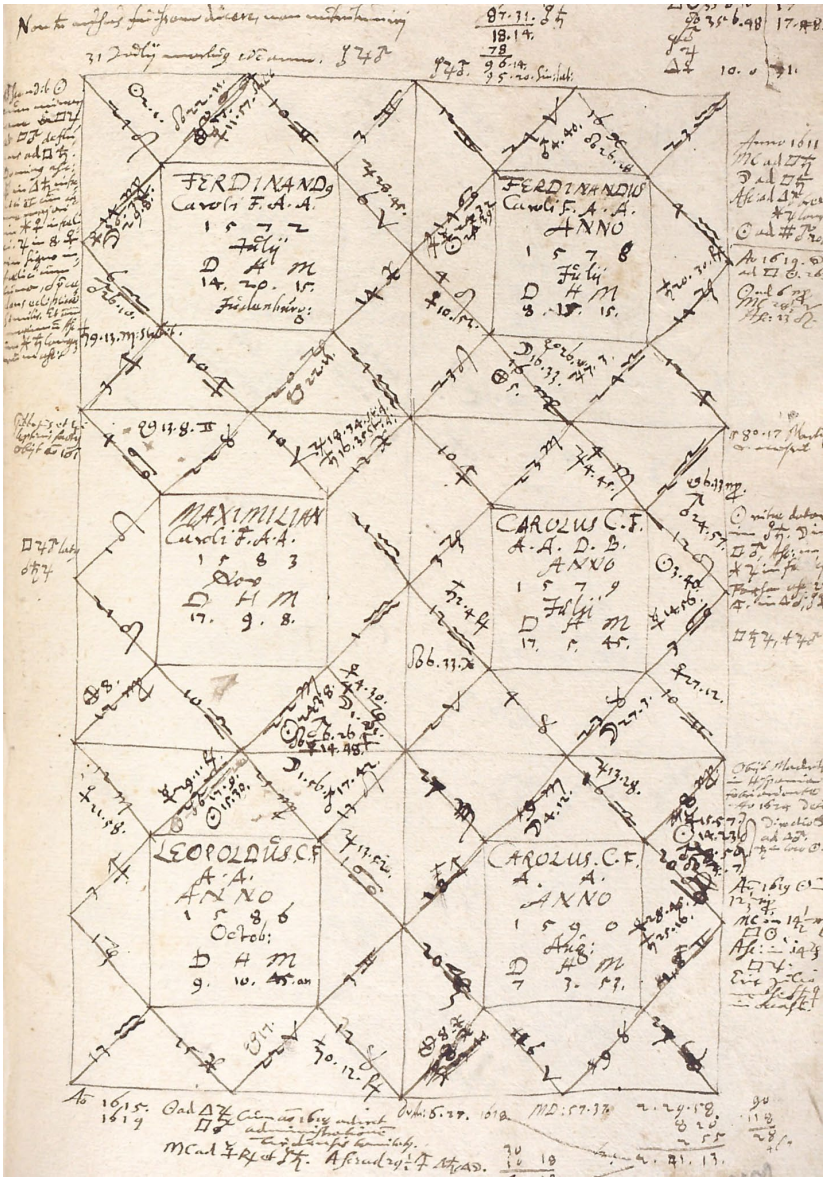

Fig. 2: Page from Kepler's horoscope collection with six horoscopes. Fund No. 0285, inventory No. 01, storage unit No. 0014, sheet 212.1. © Saint Peterburg Branch of the Archive of Russian Academy of Sciences.

The horoscopes are (1) Ferdinand, archduke of Austria, son of Charles II of Austria. 1572, July, D.14, H. 20, M.15. Judenburg; (2) Ferdinand II, Holy Roman Emperor, 1578, July, D. 8, H. 15, M.15; (3) Maximilian rnest, Archduke of Austria, 1583, November, D.17, H.9, M.8; (4) Charles, Archduke of Austria, 1579, July, D. 17, H.5 M.45; (5) Leopold V, Archduke of Austria, 1586, October, D.9, H.10, M.45 am; (6) Charles, Archduke of Austria, 1590, August, D.7, H.3, M.53.

There are some specific features in the arrangement of material: one is a set of 53 charts organized according to their dates.[93] The first chart of the set, erected for 31 December 1466, corresponds to the zodiacal sign of Capricorn, and the dates in the succeeding charts follow the direction and order of the Zodiacal signs – Aquarius, Pisces, Aries and Taurus – and conclude with the horoscope of the Prophet Muhammad with the Sun in Taurus.[94] The compilers of the *Johannes Kepler Gesammelte Werke* (*KGW*) consider the order of these charts as well as the charts taken from the calendar of Paul Hébert (1511–1569), the professor of theology in Wittenberg University.[95] In 1550, Hébert published his historical calendar; it became very popular and was reprinted many times and translated into French. This calendar was addressed to Protestants, but with Catholic Saints.[96] The *KGW* affirms that Kepler took the data from Hébert's calendar and started erecting charts for them, but compiled only fifteen horoscopes.[97] All the other charts remained unfinished, although all of them were marked with the dates and names.[98] The *KGW* includes this set of charts and appears in Kepler's collection under the heading *Ex Ebero – From Hébert*.[99] However, the original sheet 207 *verso* in the collection,

[93] Dilanian, *The Kepler Project*, pp.38-46.
[94] Dilanian, *The Kepler Project*, p.46, chart 5.
[95] *Johannes Kepler Gesammelte Werke*, Volume 21, 2.2, published by Kepler Commission at the Bavarian Academy of Sciences include Kepler's horoscope collection. All materials of the *Gesammelte Werke* are reproduced from the photocopies of manuscripts, stored in Saint Petersburg archive. For Hébert's horoscopes see Johannes Kepler, *Gesammelte Werke, Manuscripta astrologica*. Vol. 21, 2.2 (München, 2009), p.258, at https://publikationen.badw.de/de/035836866/pdf/CC%20BY (accessed 10 June 2021) [hereafter, *KGW*, 21, 2.2].
[96] *KGW*, 21, 2.2, p.258.
[97] *KGW*, 21, 2.2, p.258.
[98] Dilanian, *The Kepler Project*, pp.38–46.
[99] *KGW*, 21, 2.2, p.258, footnote 4.

which opens this set of horoscopes, does not have such a heading.[100] Evidently, this fragment needs further research. However, and it is indisputable, 'that these dates of birth should serve as an exercise in astrological skill', as the *KGW* claims.[101] The largest part of the collection contains the charts for the principal figures of the European courts, demonstrating the importance of having the horoscopes 'of those who govern public destiny', as he wrote, 'ready at hand'.[102]

Kepler provided yet another option for organizing the material. He selects the family charts and unites them in groups; for instance, ten horoscopes of the Herberstorf family[103] and eighteen horoscopes of the Khienberg family,[104] as well as the above mentioned Kepler family horoscope collection.[105] Obviously, Kepler was interested in studying the family charts, which brought him to the discovery of common astrological patterns in the horoscopes of the relatives. Thus, in his *Harmonice Mundi*, Kepler claimed that there is an affinity in the nativities under which parents and children are born.[106] In *De Stella Nova in pede serpentarii*, Kepler asserted that, 'at the birth of children, and particularly of the first-born, the planets as well as the Ascendant and Midheaven usually are in the same zodiacal degree areas, or in square or opposition to those areas, as at the birth of the father, or (especially) of the mother', and continues:

> I was born when the Moon was short of an opposition to the Sun by 40 degrees. With my first-born, the Moon was short by the same amount of a conjunction with the Sun. With the second child, the Moon had passed the opposition to the Sun by the same number of degrees. With the fourth child, the Moon was 38 degrees from the opposition to the Sun. With the third child, it was not much different, for the Moon was at a separation of 40 degrees from the Sun plus one day of lunar

[100] Dilanian, *The Kepler Project*, p.38; 0285.01.0014.0207.1 in the original Archive coding.
[101] *KGW*9, 21, 2.2, p.258.
[102] Kepler, *On the More Certain Fundamentals of Astrology*, p.103.
[103] Dilanian, *The Kepler Project*, pp.107–108.
[104] Dilanian, *The Kepler Project*, pp.110–112.
[105] Dilanian, *The Kepler Project*, pp.135–151.
[106] Kepler, *The Harmonies*, p.383.

> motion: the birth was expected the previous day. I pass over further examples that agree with these.[107]

One grandiose horoscope comparison, consisting of seventeen concentric circles, serves as an illustration of such research. There are the charts of Charles II, Archduke of Austria (1540–1590) and his fifteen children.[108] The list of the names, included into the chart, is as follows: Carolus (Charles II himself),[109] Ferdinandus – the elder son,[110] Anna,[111] Christierna,[112] Catharina,[113] Elisa,[114] Ferdinandus,[115] Carolus,[116]

[107] Kepler, *De Stella Nova, p. 43,* excerpts selected and translated *by* Dr Kenneth G. Negus, *Kepler's Astrology*, at http://cura.free.fr/docum/15kep-en.html (accessed 10 June 2021).
[108] Dilanian, *The Kepler Project*, p.127. Archive code 0285.01.0014.0254.1.
[109] Charles II chart: Dilanian, *The Kepler Project*, p. 34. Archive code 0285.01.0014.0205.1, chart 2.
[110] Ferdinand, Archduke of Austria, Charles' II elder son, see: Dilanian, *The Kepler Project*, p.48. Archive code 0285.01.0014.0212.1, chart 1.
[111] Anna, Grand Duchess of Austria, Queen consort of Poland and Lithuania, see Dilanian, *The Kepler Project*, p.52. Archive code 0285.01.0014.0214.1, chart 4.
[112] Maria Christina, Archduchess of Austria, Princess of Transylvania, see Dilanian, *The Kepler Project*, p.49. Archive code 0285.01.0014.0213.0, chart 2.
[113] Catherine Renata Archduchess of Austria, see Dilanian, *The Kepler Project*, p.49. Archive code 0285.01.0014.0213.0, chart 3.
[114] Elisabeth, Archduchess of Austria, see Dilanian, *The Kepler Project*, p.51. Archive code 0285.01.0014.0214.1, chart 1.
[115] Ferdinand II, Holy Roman Emperor, see Dilanian, *The Kepler Project*, p.48. Archive code 0285.01.0014.0212.1, chart 2.
[116] Charles, Archduke of Austria, see Dilanian, *The Kepler Project*, p. 48. Archive code 0285.01.0014.0212.1, chart 4.

Gregoria,[117] Leonora,[118] Maximilianus,[119] Margreta,[120] Leopoldus,[121] Magdalena,[122] Constantia[123] and Carolus.[124]

He inserted all the data from the charts, starting with Charles's, and then filled each circle according to the children's order of birth into one multi-circled chart, divided into twelve sections. Each section coincided with one zodiacal sign. He included all necessary information: the positions of the planets, lunar nodes, Parts of Fortune and the cusps of the cardinal points of the astrological houses – Ascendant, Descendant, Midheaven and Lower Midheaven. He also marked each section of the outer circle with the summary of factors, contained by a given section: the Aries section contained 16 entities, Taurus – 14 entities, Gemini – 15, Cancer – 19, Leo – 19, Virgo – 26, Libra – 21, Scorpio – 19, Sagittarius – 16, Capricorn – 19, Aquarius – 13, and Pisces contained 16 entities. No written commentary on this multi-circled diagram has survived. However, the examination of this grand-chart opens the doors to the Kepler's astrological laboratory.

The horoscope coordinates for Charles II himself are:

> Lunar North Node – 13º Aries, Moon – 28 º Taurus, Part of Fortune - 2º Gemini, Sun – 22º Gemini, Asc – 27º Gemini, Mercury – 14º Cancer, Jupiter – 29º Cancer, Venus – 30º Cancer, IV house – 26º Leo, Mars – 29º Virgo, Saturn – 8º

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[117] Gregoria Maximiliana, Archduchess of Austria, see Dilanian, *The Kepler Project*, p.49. Archive code 0285.01.0014.0213.0, chart 6.

[118] Eleanor, Archduchess of Austria, see Dilanian, *The Kepler Project*, p.49. Archive code 0285.01.0014.0213.0, chart 5.

[119] Maximilian Ernest Archduke of Austria, see Dilanian, *The Kepler Project*, p.48. Archive code 0285.01.0014.0212.1, chart 3.

[120] Margaret of Austria, Queen of Spain, see Dilanian, *The Kepler Project*, p.49. Archive code 0285.01.0014.0213.0, chart 4.

[121] Leopold V, Archduke of Austria and Bishop of Passau and Strasbourg, see Dilanian, *The Kepler Project*, p. 48. Archive code 0285.01.0014.0212.1, chart 5.

[122] Maria Magdalena, Archduchess of Austria and Grand Duchess of Tuscany, see Dilanian, *The Kepler Project*, p.52. Archive code 0285.01.0014.0214.1, chart 2.

[123] Constance, Archduchess of Austria, Queen of Poland, see Dilanian, *The Kepler Project*, p.52. Archive code 0285.01.0014.0214.1, chart 3.

[124] Charles of Austria, Bishop of Wroclaw, *the Posthumous,* see Dilanian, *The Kepler Project*, p.48. Archive code 0285.01.0014.0212.1, chart 6.

Libra, Lunar South Node - 13º Libra, Desc - 27º Sagittarius, MC – 26º Aquarius.

Following Kepler's concept that children in their horoscopes repeat definite patterns of their parents' charts, 'the planets as well as the Ascendant and Midheaven usually are in the same zodiacal degree areas, or in square or opposition to those areas', it is possible to select the degree areas, which may be repeated in the corresponding charts. Such degree areas are (+/- 3 degree orb):

- 28º Taurus, squares, and oppositions to it: 28º Leo, 28º Scorpio, and 28º Aquarius.
- 22º and 27º Gemini, squares and oppositions to them: 22º-27º Virgo, 22º-27º Sagittarius, 22º-27º Pisces.
- 29º-30º degrees of Cancer, squares and oppositions to them: 29º-30º Aries, 29º-30º Libra and 29º-30º Capricorn, which means that the last degree areas with the 3 degree orbs of all 12 twelve signs of the zodiac will be under consideration.

Without written testimony from Kepler himself we do not know what he observed, but the examination of the charts of Charles II's children demonstrates that they contain several factors that correspond to their father's chart and are consistent with Kepler's claims. Ferdinand, the elder son has Jupiter, Moon, and Mars in the last degrees of the signs, his Sun occupies 2º of Leo that is within the 3º orb, and Mercury in both Charles' and Ferdinand's charts is approximately in the same degrees of the zodiac: 14 and 12 degrees of Cancer respectively. As for the charts of the other children, they include several astrological factors that coincide with the above mentioned degree areas. Charles's Mercury was 14º Cancer, conjunct Ferdinand's Mercury and Part of Fortune, while Elisa was born with the Midheaven in 12º Cancer, Ferdinand with the Ascendant in 14º Cancer, Carolus with Mercury in 15º Cancer, Leonora with Mars in 12 º Cancer and Leopoldus with Jupiter at 14º Cancer.

Evidently Kepler's statement concerning similarities in the horoscopes of relatives is based on his own research, which rests on 'the hard kernel', that is experience and natural cause. The methodology and organization of the material served Kepler's analysis of the charts, enabling him to make quantitative, qualitative and comparative judgements.

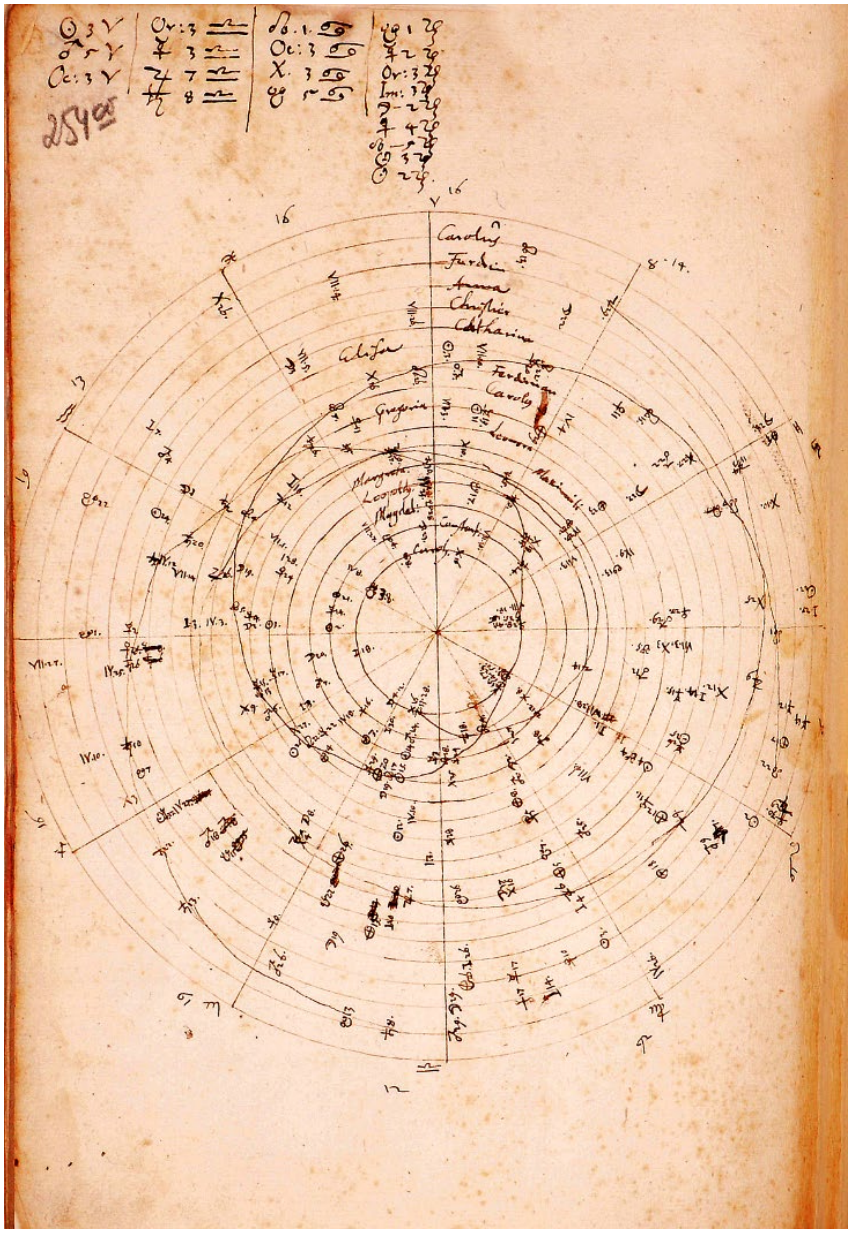

Fig. 3: Horoscope for Charles II and his fifteen children. Fund No 0285, inventory No. 01, storage unit No. 0014, sheet 0254. © Saint Peterburg branch of the Archive of Russian Academy of Sciences.

Hans Ulrich von Eggenberg

One of the most notable of Kepler's contemporaries whose horoscope was included was Hans Ulrich von Eggenberg (1568–1634), who became the Prince of Eggenberg, Duke of Krumau and Governor of Inner Austria.[125] Eggenberg's palace, Schloss Eggenberg, was in Graz, which occupied a strategically and vital zone on the boundary between catholic Europe and the Ottoman empire. We do not have a record of Kepler's communications with von Eggenberg, but we do know that in August 1594, soon after appearing in Graz, Kepler wrote a letter to a young, unknown nobleman.[126] Kepler sent him a copy of his calendar for the coming year, 1595, and asked for his birth data for private study, pointing to the possibility of 'becoming famous as a particular patron and promoter':

> … according to this noble art [i.e., astrology], grounded primarily on lifelong experience and sundry examples of the nativities of noble persons, I wish to humbly entreat Your Grace, since some more distinguished individuals, either of noble origin or far greater princely persons (or hence descended) than those of us still rummaging about in life, would have recorded the times of birth and would kindly wish to grace me with copies for the promotion of this art and my studies of it and take the opportunity to send [them] at their convenience.[127]

Barbara Kaizer points out that Eggenberg appeared in his native Graz in 1595, a few months after Kepler sent the above letter.[128] However, Kaizer also specifies that the archives of the Eggenberg family were destroyed in the nineteenth century; therefore, necessary sources concerning Hans

[125] For a biography of Hans Ulrich von Eggenberg, his philosophical programme and the description of his residence, see Barbara Kaizer 'Schloss Eggenberg – A Symbolic World', in Sonja Draxler, Max E. Lippitsch and Gudrun Wolfschmidt, eds, *Harmony and Symmetry. Celestial regularities shaping human culture, Proceedings of the SEAC 2018 Conference in Graz,* Vol. 01 (Hamburg: SEAC Publications, tradition, 2020).

[126] Boockmann, 'Johannes Kepler's Horoscope Collection', p.12.

[127] Boockmann, 'Johannes Kepler's Horoscope Collection', p.10.

[128] Barbara Kaizer, 'Schloss Eggenberg – A Symbolic World', in Sonja Draxler, Max E. Lippitsch and Gudrun Wolfschmidt, eds, *Harmony and Symmetry. Celestial regularities shaping human culture, Proceedings of the SEAC 2018 Conference in Graz,* Vol. 01 (Hamburg: SEAC Publications, tradition, 2020), no pagination, section 6.7.2.

Ulrich and his life circumstances are lacking.[129] The uncertainty regarding Eggenberg's life details and gaps in his written biography are such that even his birth data was lost; the only known information was the month and the year of birth.[130] However, his full date of birth is now established due to his horoscope having been discovered in Kepler's handwritten horoscope collection.[131]

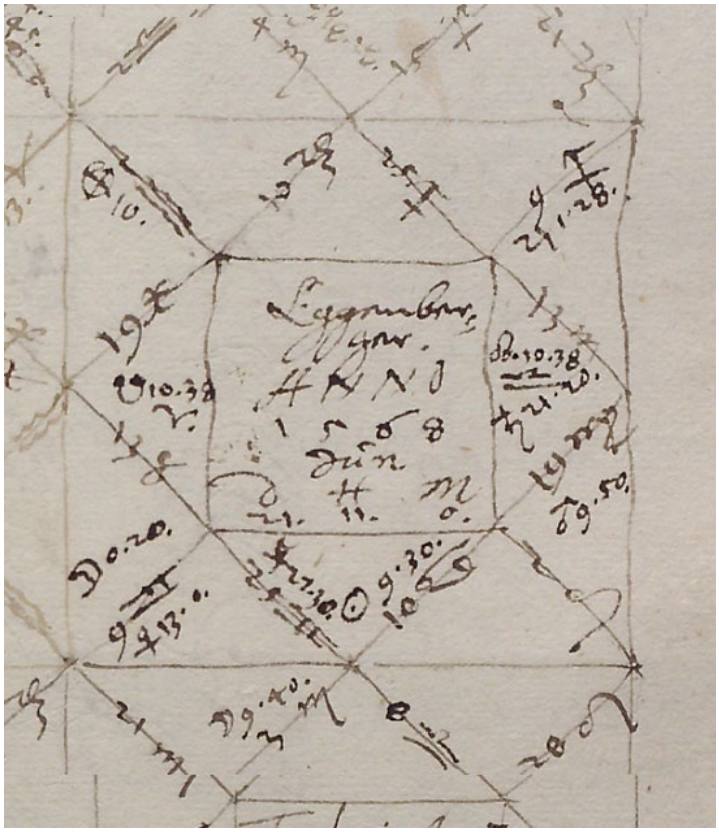

Fig. 4: Horoscope of Hans Ulrich von Eggenberg from Kepler's horoscope collection. Fund No. 0285, inventory No.01, storage unit 0014, sheet 233. © Saint Peterburg Branch of the Archive of Russian Academy of Sciences.

[129] Kaizer, 'Schloss Eggenberg – A Symbolic World', sections 6.7.1, 6.7.2.
[130] Private conversation of the author of the paper with Barbara Kaizer during a visit to Schloss Eggenberg in 2018.
[131] Dilanian, *The Kepler Project*, p.88, chart 4.

Kaizer points to similarities and common features in the biographies of Johannes Kepler and Ulrich von Eggenberg: they both were raised as Lutherans and both studied at Tubingen University.[132] Kaizer suggests that Eggenberg also studied 'under Michael Maestlin, whose *Epitome Astronomiae* was later found in his library, as did Kepler's *Tabulae Rudolfinae* and *Mysteria Cosmographica* or Copernicus' *De revolutionibus orbium coelestium*. Above all, in addition to numerous *astrologica*, the library also contains works on mathematics, chronology and medicine as well as iatrochemistry'.[133] She considers that Eggenberg's profound humanistic education shaped his career as well as formed his vision, which he later realized in his cosmically arranged residence.[134]

In 1625 von Eggenberg returned to Graz and started building a new residence in place of the Eggenberg family's old estate, designed according to a special project and specific ideology. The new project was a typical piece of a 'political architecture', in Kaizer's terms.[135] The whole project served to express two major ideas, as Campion articulates them: a theory of power and a theory of harmony.[136] The demonstration of power supported the legitimization of Eggenberg's political status, whilst the creation of harmony through establishing connections between 'the seemingly unconnected diversity of things as one harmonious whole'… offered him the opportunity to present his contested rule as a time of ideal cosmic order and perfection'.[137]

The residence was projected and erected as a 'calendar building', correlated to a principle recently formulated by Matthew Beckett: a house that 'incorporated horological elements'.[138] These elements, expressed via the number of architectural components, were intended to correspond to calendar units, like the quantity of external doors, windows or panes of glass, chimneys, and staircases, while other elements should total either

[132] Kaizer, 'Schloss Eggenberg – A Symbolic World', 6.7.2.
[133] Kaizer, 'Schloss Eggenberg – A Symbolic World', 6.7.2.
[134] Kaizer, 'Schloss Eggenberg – A Symbolic World', 6.7.2.
[135] Kaizer, 'Schloss Eggenberg – A Symbolic World', 6.7.3.
[136] Nicholas Campion, 'Archaeoastronomy and Calendar Cities', *Journal of Physics: Conference Series 685* (2016): 012005, pp.1–8, p.3, at https://iopscience.iop.org/article/10.1088/1742-6596/685/1/012005/pdf (accessed 10 June 2021).
[137] Kaizer, 'Schloss Eggenberg – A Symbolic World', 6.7.3, 6.7.5.
[138] Matthew Beckett, 'The Calendar House: a History', *Country Life* (2 January 2013), at http://www.countrylife.co.uk/property/article/530609/The-Calendar-House-Ahistory.html#hZIyrUgCCmZFpVw4.99 (accessed 10 June, 2021).

four (the number of seasons), seven (days in a week), twelve (months in a year), or 365 (days in a year).[139] The Eggenberg Palace has 365 exterior windows; each floor contains 31 rooms, with a large hall on the central axis of the building thematically tied to the planets, called a 'Planetary room', and decorated with magnificent pictures of the planets. Twenty four rooms on the second floor, divided into twelve diurnal and twelve nocturnal rooms, correspond to the hours in a day. They were arranged in a circle orbiting the perimeter of the building.[140] The sophisticated philosophical program incorporated into the whole project was 'intended to present the owner as the ideal of the *Princeps philosophus*: Plato's wise man at the head of state, who ruled for the sake of his subjects by dint of his personal virtues', so the building became 'the representation of the universe, the cosmos of a learned statesman', argues Kaizer.[141]

The image of a perfect political ruler-philosopher, who presents his rule as an expression of ideal cosmic order and virtue, coincided with Kepler's concept of political astrology. It expressed Kepler's goal of astrology and astronomy, as Campion argues: the 'preservation of political harmony which, in turn, depends on engagement with the wider ecology of the cosmos, this was the application of his hard kernel of astrological truth'.[142]

Conclusion

Kepler's research in astrology was strongly tied to his philosophical and theological views. They were formed by the Copernican theoretical concept of the heliocentric world system and by his sharp discussions with Pico Della Mirandola, who was sceptical of astrology, as well as by the Lutheran approach to astrology, which was considered a part of the Divine Providential plan.

This theoretical conceptualization led to fully revised principles of astrology itself. Kepler's attitude toward astrology – that it needed purification from mediaeval dogma and should be further grounded into natural causes – persuaded him to reform the entire previous astrological tradition. This transformation required new approaches, which Kepler formulated as the need for research based on observation, analysis and practical application. The basis for this research was Kepler's enormous handwritten horoscope collection, which formed part of his intellectual

[139] Beckett, 'The Calendar House: a History'.
[140] Barbara Kaizer, Paul Schuster, *Schloss Eggenberg. Architecture and Furnishings* (Graz: Universalmuseum-Joanneum, 2016), p.76.
[141] Kaizer, 'Schloss Eggenberg – A Symbolic World', section 6.7.5.
[142] Campion, 'Johannes Kepler's Political Cosmology', section 7.1.3.

heritage. Kepler worked on it for decades, collecting the data and then analysing and correcting it. The horoscope collection was a foundation for his scrutiny.

Kepler's modernised astrology became part of the larger Lutheran project of reforming astrology and its attempt to move it to the rank of universal science. The aim of the project was to study the history and fate of societies, as well as human individuals, and correlate these to cosmic cycles and astrological patterns for the purpose of mitigating political and social crises, thus preserving social harmony and creating and managing social reform. However, this project, along with Kepler's modified astrology, could not survive in the intellectual atmosphere of the second part of the seventeenth century, when astrology lost its intellectual credibility.

Nevertheless, Kepler's promotion of empirical research, his theoretical model and its practical application to astrological material may be considered a foundation, an introductory and a provisional step to the methods formulated by astrologers and researchers three centuries later. One of key figures was Alexander Chizhevsky (1897–1964) a Russian cosmist and Soviet-era polymath, an interdisciplinary scientist, who was prominent for his use of historical research techniques to link the 11-year solar cycle, Earth's climate and the mass activity of the peoples.[143] Chizhevsky's application of historiographic research methods to regulate mass behavior and to direct its activity to the productive channels, to lead people to harmonization and substantial life development, followed both Kepler's philosophy of world harmony and his methodology to using political astrology as an instrument for governing society and protecting civil order.[144] Putting it into a larger context, Kepler's ideas, assimilated by Chizhevsky, may be vital for understanding of cosmic, biological and sociological evolution to mass energy processes from the perspective of modern cross-disciplinary studies and inquiries for global prognostication.

[143] A.L. Chizhevsky, *Phizicheskie factory istoricheskogo processa (Physical factors of the historical process)* (Kaluga:1, Gospolittipografiya, 1924).
[144] Karine Dilanian, 'In the Search of the Ideal Historical Process', proceedings of the conference *Harmonice Mundi,* 2019, in progress.